



# UNITED STATES PATENT AND TRADEMARK OFFICE

*ccn*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,788	09/19/2005	Kenichiro Hashimoto	2271/75146	6045
23432	7590	08/28/2007	EXAMINER	
COOPER & DUNHAM, LLP 1185 AVENUE OF THE AMERICAS NEW YORK, NY 10036			STEPHENS, JUANITA DIONNE	
ART UNIT		PAPER NUMBER		
2853				
MAIL DATE		DELIVERY MODE		
08/28/2007		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/549,788	HASHIMOTO, KENICHIROH
	Examiner	Art Unit
	Juanita D. Stephens	2853

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on Application filed 9/19/2005.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-21 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-9 and 13-21 is/are rejected.  
 7) Claim(s) 10-12 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 19 September 2005 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>9/19/2005</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____

## DETAILED ACTION

### ***Information Disclosure Statement***

1. Acknowledgement is made of the Information Disclosure Statement filed 9/19/2005.

### ***Specification***

2. The abstract of the disclosure is objected to because "5" should be deleted. Correction is required. See MPEP § 608.01(b).
3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

4. Claims 7-12 are objected to because of the following informalities:  
In claim 7, line 23 between "end, a" insert --by--.  
In claim 10, line 25 replace "aid" with --said--.  
Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-9 and 13-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubota et al. (US 6,464,342 B1).

Kubota et al. at least teaches a method of manufacturing a liquid ejection head and a liquid ejection apparatus (Fig. 18) for forming an image on a recording medium having a liquid cartridge (Fig. 17) comprising a liquid ejection head (330) and a liquid container (331) containing a liquid supplied to said liquid ejection head, said container forming a unitary body with the liquid ejection head (col 23, Ins 1-5), said liquid ejection head comprising: **1**) an ejection port (discharge opening 18) (as shown in Fig. 3), **2**) a flow passage (flow channel 10) communicating with said ejection port, **3**) a device substrate (1) provided with a heating body (heat generator 2) for forming a bubble in said liquid filled in said flow passage (col 11, Ins 19-25), **4**) a movable member (31/203) on said device substrate in a state that a first end thereof is fixed upon said device substrate and a free end (32) at an opposite end of said movable member is in a freely movable state (col 11, Ins 44-50), said movable member (31/203) being provided so as to face said heating body (heat generator 2) such that there is formed a gap between said movable member (31) and said device substrate (1), said movable member causing a displacement upon ejection of said liquid from said ejection port as a result of a pressure caused by formation of said bubble (col 11, Ins 44-50), **5**) wherein said movable member (31/203) is constructed by lamination of three or more layers (203a, 203b, 203c) (col 4, Ins 13-15), an edge surface of at least one layer of said movable member being covered, at said free end, by another layer of said three or more layers (col 15, Ins 7-16, as shown in Fig. 7D), **6**) wherein said edge surface of said movable member (31/203) at said free end forms a flat surface (col 14, Ins 43-47), **7**) wherein said movable member (31/203) has an initial bending in a direction opposite to said

heating body, **8**) said movable member comprising lamination of at least three layers (203a, 203b, 203c) of two different materials (SiN and SiO<sub>2</sub>), an edge surface of at least one layer of said movable member being covered, at said free end, by a layer forming an outermost layer of said movable member (col 13, Ins 60-67; col 15, Ins 7-16), **9**) said movable member comprising lamination of two or more layers of two, different materials (SiN and SiO<sub>2</sub>), said lamination including a first layer (203a) closest to said device substrate (1), an edge surface of said movable member being covered, at said free end, a layer of an odd number order (fifth layer 203e) as counted from said first layer (col 15, Ins 7-16, as shown in Fig. 7D), **10**) said movable member comprising lamination of two or more layers of two or more materials (SiN and SiO<sub>2</sub>), said movable member having a flat edge surface at said free end (col 14, Ins 43-47), **11**) and **11**) the step of forming a part in which two layers or more layers of a same material (col 19, Ins 43-46) are directed laminated and etching said part (col 20, Ins 43-67).

***Allowable Subject Matter***

7. Claims 10-12 will be allowed after corrections as identified in the "Claim Objection" section are made.
8. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach, suggest or render obvious the combination of a movable member on said device substrate in a state that a first end thereof is fixed upon said device substrate and a free end at an opposite end of said movable member is in a freely movable state, said movable member being provided so as to face said

heating body such that there is formed a gap between said movable member and said device substrate, said movable member causing a displacement upon ejection of said liquid from said ejection port as a result of a pressure caused by formation of said bubble, said movable member comprising lamination of three or more layers of three, different materials, an edge surface of said movable member being covered, at said free end, said lamination including a first layer closest to said device substrate, an edge surface of said movable member being covered by an uppermost layer forming said lamination and formed of a material identical with a material constituting said first layer. This invention solves the problem of preventing unwanted formation of sawtooth structure at such an edge at the time of etching.

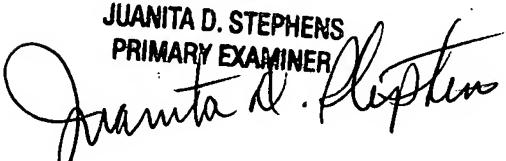
#### **Contact Information**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juanita D. Stephens whose telephone number is (571) 272-2153. The examiner can normally be reached on Flex (Monday-Thursday 9:00 am -6:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JUANITA D. STEPHENS  
PRIMARY EXAMINER



Juanita D. Stephens  
Primary Examiner  
Art Unit 2853

JDS

August 23, 2007